## Claims

1. A method for routine determination of $IC_{50}$ or $EC_{50}$ values for compounds via biological assay at a single concentration, which comprises:

a) Identifying a biological assay capable of producing a percent effect for a compound tested for activity against a target at a known concentration;

b) Performing the assay on an initial collection of at least 10 compounds, and at least 1 commercially available compound to be used as positive control, each assayed at a set of 3 to 10 or more concentrations, measuring a percent effect at each concentration for each compound;

c) Determining an $IC_{50}$ or $EC_{50}$ for each of these initial compounds by fitting a mathematical dose response curve to the data for each compound, using a computer, and standard linear or nonlinear regression techniques;

d) Using the resultant data from these initial compounds to fit a mathematical relationship between the $IC_{50}$ or $EC_{50}$ values and the percent inhibition values at a single fixed concentration *X*,

e) Using a computer, and standard linear or nonlinear regression techniques, developing an equation relating $IC_{50}$ or $EC_{50}$ to percent inhibition or percent response on all remaining and future test compounds, at the previously fixed single concentration *X*, and determining the $IC_{50}$ or $EC_{50}$ via the mathematical equation developed in step d).

2. The method of claim 1 wherein said mathematical dose response curve is the Hill function,

$$percent\ inhibition = \frac{100}{1 + \left( \frac{IC_{50}}{concentration} \right)^{h}}$$

3. The method of claim 1 wherein said mathematical relationship is $IC_{50} = \exp\{a + b \bullet (\text{percent inhibition at concentration } X)\}$.

4. The method of claim 1 wherein said biological assay is an assay for drug-drug interactions related to the target cytochrome P450 (CYP).

5. The method of claim 4 wherein the target is selected from the group consisting of CYP2C9, CYP2D6, CYP3A4, CYP1A2, and CYP2C19.

6. The method of claim 1 where the target is an enzyme.

7. The method of claim 1 wherein the target is a receptor.

8. The method of claim 1 wherein the target is a transporter.

9. The method of claim 1 wherein said biological assay relates to affinity for any target protein wherein modulation of activity is therapeutically desired.

10. The method of claim 1 wherein said biological assay relates to affinity for any nontherapeutic protein wherein modulation of said activity is undesirable.